

Patent Application No. 10/056,546

REMARKS

This Amendment is in response to the Office Action dated February 27, 2006 ("OA"). In the Office Action, claims 1-28 were rejected under 35 USC §103. By this Amendment, claims 1, 16 and 22 are amended. Currently pending claims 1-28 are believed allowable, with claims 1, 16 and 22 being independent claims.

CLAIM REJECTIONS UNDER 35 USC §103

Claims 1-28 were rejected under 35 USC §103 as obvious over U.S. Patent No. 6,804,684 issued to Stubler et al. (hereinafter "Stubler") in view of U.S. Patent No. 6,816,847 to Toyama (hereinafter "Toyama"). OA, pg. 2.

A *prima facie* case for obviousness can only be made if the combined reference documents teach or suggest all the claim limitations. MPEP 2143. Furthermore, to establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or to combine reference teachings. MPEP 2143.

Before addressing the subject matter of the claims, a general discussion of the present invention, Stubler and Toyama may assist review of the pending application.

The present invention relates to efficient interactive annotation or labeling of multimedia content to facilitate effective searching, filtering and usage of content. App., pg. 1, ln. 4-6. In one embodiment of the invention, efficiency is realized by prompting a user to annotate only a small set of selected example content, with the results propagated to the annotation of a maximum number of other multimedia content. App., pg. 4, ln. 11-14, pg. 7, ln. 2-4. This causes the user to annotate as few examples as possible. App., pg. 5, ln. 7-8.

Stubler appears to relate to a method for associating captions with images in an image database environment. Stubler, col. 1, ln. 7-10. Briefly, the captioning technique of Stubler involves acquiring an image for evaluation with respect to stored images, automatically extracting metadata from the acquired image, automatically selecting

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one or more stored images having metadata similar to the extracted metadata, and generating one or more captions for the acquired image from preexisting captions associated with the selected stored images. Stubler, col. 3, ln. 15-32. Although Stubler discusses an optional feature for user verification of extended captioning or semantic labeling, there is no teaching of actively selecting examples of multimedia content to achieve the annotation of a maximum number of other multimedia content. Stubler, col. 8, ln. 40-55.

Toyama appears to relate to computerized aesthetic judgment of images. Toyama, col. 1, ln. 47-48. According to Toyama, a classifier is trained based on a set of training images, along with aesthetic scores assigned to the training images. Toyama, col. 5, ln. 15-19. The training images can be scored by professionals and/or laypeople. Toyama, col. 5, ln. 32-38. Once trained, the classifier can be used to provide aesthetic scores to input images, as well as provide recommendations to improve the aesthetic scores of the input images. Toyama, col. 1, ln. 65 - col. 2, ln. 4.

Claim 1

Claim 1 is amended here in to recite, in part, "actively selecting examples of multimedia content to be annotated by a user, wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, such that only those examples which are most ambiguous are selected." No new matter is believed added by this amendment, and support for the subject matter introduced can be found at least at page 7, lines 2-4 of the Application.

In rejecting claim 1, the Office Action argues that although Stubler does not teach actively selecting examples of multimedia content to be annotated by a user, wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, this teaching is found in Toyama. The Office Action cites column 5, lines 15-46 of Toyama in support of its position.

The cited passages of Toyama state,

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In this section of the detailed description, a method for training a classifier, according to one embodiment of the invention, is described. Referring to FIG. 2, a flowchart of the method is shown. In 200, a training set of images and corresponding aesthetic scores for the images is input. The images are desirably the same type of images that are to be later judged. For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc. The aesthetic scores for the images are desirably made by graphics professionals. Thus, the web pages are desirably scored by professional web page designers, the scanned-in pictures by professional photographers, the created pictures by professional artists, the drawings by professional drawers, etc.

The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor. Likewise, the aesthetic scores for each image desirably includes a number of such scores, by a diverse number of professionals or laypeople, groups of which may be intentionally selected for their common taste (e.g., people who prefer The New York Times to the Wall Street Journal, people who read Wired Magazine, etc.). Each image is desirably scored manually by each professional (or each person surveyed) by whatever criteria the person wishes to use for deeming the aesthetics of the image, or according to some standard specified by the survey. Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as "excellent," "good," "average," "poor," etc. Toyama, col. 5, ln. 15-46.

The Examiner takes the position that Toyama shows that selected examples are annotated by a user and wherein the examples provide for achieving a maximal disambiguation result. OA, pg. 8. The Applicants respectfully disagree with the Examiner.

Claim 1 recites that the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, such that only those examples which are most ambiguous are selected. Toyama contains no such teaching. The only selection criterion discussed in Toyama is whether the training set is aesthetically pleasing or aesthetically poor. Thus, the Applicants respectfully submit that Toyama does not provide any instruction for selecting images based on at least one criterion for achieving a maximal disambiguation result, as recited in claim 1 of the present invention.

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In rejecting claims under U.S.C. §103, the Examiner bears the initial burden of establishing a *prima facie* case. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ 1443, 1444 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The Office Action also argues, "It would have been obvious and desirable to have used the active selection techniques disclosed by Toyama in col. 5 lines 15-46 to have improved the active selection techniques disclosed by Toyama." The Applicants respectfully submit that Toyama makes no mention of an active selection technique. Specifically, Stubler teaches generating captions or labels for acquired images from preexisting captions or labels associated with stored images. There is no mention in Stubler of an active selection technique.

The Office Action alleges that the field of endeavor is very similar for Stubler and Toyama since Toyama "is directed towards propagating annotations from a known training set to similar images that have do not have any associated annotations." The Applicant respectfully submits that Toyama does not mention or suggest propagating annotations from a known training set to similar images that do not have any associated annotations. The citation offer by the Examiner (col. 1, line 47 to col. 2, line 14 of Toyama) supporting the Office Action's assertion is devoid of teaching relating to annotations.

Furthermore, the Office Action fails to cite any suggestion or motivation in the prior art to modify the Stubler with the teachings of Toyama. Toyama discusses techniques for training a classifier to provide aesthetic scores for input images. Stubler does not demonstrate any appreciation of training techniques such as discussed in Toyama. Thus, the Applicant respectfully submits that no motivation or suggestion exists in the cited art to modify the Stubler with the teachings of Toyama.

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For at least the reasons discussed above, the Applicant respectfully asserts that the Office Action has not established a *prima facie* case of obviousness for claim 1. As such, the rejection of claim 1 should be withdrawn. Moreover, the Applicant believes that claim 1 is patentable over the cited documents and earnestly requests an indication of allowability for claim 1.

Claims 2-15

Claims 2-15 are dependent on and further limit claim 1. Since claim 1 is believed allowable, claims 2-15 are also believed allowable for at least the same reasons as claim 1.

Claim 23

Claim 23 recites, "The method of claim 1, wherein the at least one criterion includes an ambiguity level of the selected examples." In rejecting claim 23, the Office Action argues that although Stubler does not teach wherein at least one criterion include an ambiguity level of selected examples, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama. The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

The Applicants find only two sentences that deal with selecting examples in the citation provided by the Examiner. The first sentence states, "For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc." The second sentence states, "The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor." Neither sentence mentions or suggests wherein the at least one criterion includes an ambiguity level of the selected examples.

The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein at least one criterion include an ambiguity level of selected examples. OA, pg. 9. The Applicants, however, submit that the above-citation relates to

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aesthetic categories of images, not ambiguity levels of selected examples.

The Examiner further urges that Toyama teaches an ambiguity level of the selected examples at column 6, lines 19-31. This citation offered by the Examiner states,

For example, Support Vector Machines build classifiers by identifying a hyperplane that separates a set of positive and negative examples with a maximum margin. In the linear form of SVM that is employed in one embodiment, the margin is defined by the distance of the hyperplane to the nearest positive and negative cases for each class. Maximizing the margin can be expressed as an optimization problem and search and optimization thus lay at the core of different SVM-based training methods. A post-processing procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using ambiguity levels of selected examples.

For at least these reasons, and the reasons given for claim 1, claim 23 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 23.

Claim 24

Claim 24 recites, "The method of claim 1, wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space." In rejecting claim 24, the Office Action argues that although Stubler does not teach wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama.

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The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

The Applicants find only two sentences that deal with selecting examples in the citation provided by the Examiner. The first sentence states, "For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc." The second sentence states, "The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor." Neither sentence mentions or suggests wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space. OA, pg. 9. The Applicants, however, submit that the above-citation relates to aesthetic categories of images, not a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

The Examiner further urges that Toyama teaches a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space at column 6, lines 19-31. This citation offered by the Examiner states,

For example, Support Vector Machines build classifiers by identifying a hyperplane that separates a set of positive and negative examples with a maximum margin. In the linear form of SVM that is employed in one embodiment, the margin is defined by the distance of the hyperplane to the nearest positive and negative

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cases for each class. Maximizing the margin can be express as an optimization problem and search and optimization thus lay at the core of different SVM-based training methods. A post-processing procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

For at least these reasons, and the reasons given for claim 1, claim 24 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 24.

Claim 16

Claim 16 recites, in part, "wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result such that only those examples which are most ambiguous are selected."

In rejecting claim 16, the Office Action argues that although Stubler does not teach actively selecting examples of multimedia content to be annotated by a user, wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, this teaching is found in Toyama. The Office Action cites column 5, lines 15-46 of Toyama in support of its position.

The cited passages of Toyama state,

In this section of the detailed description, a method for training a classifier, according to one embodiment of the invention, is described. Referring to FIG. 2, a flowchart of the method is shown. In 200, a training set of images and corresponding aesthetic scores for the images is input. The images are desirably the same type of images that are to be later judged. For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of

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page layouts, etc. The aesthetic scores for the images are desirably made by graphics professionals. Thus, the web pages are desirably scored by professional web page designers, the scanned-in pictures by professional photographers, the created pictures by professional artists, the drawings by professional drawers, etc.

The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor. Likewise, the aesthetic scores for each image desirably includes a number of such scores, by a diverse number of professionals or laypeople, groups of which may be intentionally selected for their common taste (e.g., people who prefer The New York Times to the Wall Street Journal, people who read Wired Magazine, etc.). Each image is desirably scored manually by each professional (or each person surveyed) by whatever criteria the person wishes to use for deeming the aesthetics of the image, or according to some standard specified by the survey. Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as "excellent," "good," "average," "poor," etc. Toyama, col. 5, ln. 15-46.

The Examiner takes the position that Toyama shows that selected examples are annotated by a user and wherein the examples provide for achieving a maximal disambiguation result. OA, pg. 8. The Applicants respectfully disagree with the Examiner.

Claim 16 recites that the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, such that only those examples which are most ambiguous are selected. Toyama contains no such teaching. The only selection criterion discussed in Toyama is whether the training set is aesthetically pleasing or aesthetically poor. Thus, the Applicants respectfully submit that Toyama does not provide any instruction for selecting images based on at least one criterion for achieving a maximal disambiguation result, as recited in claim 16 of the present invention.

In rejecting claims under U.S.C. §103, the Examiner bears the initial burden of establishing a *prima facie* case. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ 1443, 1444 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be

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considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The Office Action also argues, "It would have been obvious and desirable to have used the active selection techniques disclosed by Toyama in col. 5 lines 15-46 to have improved the active selection techniques disclosed by Toyama." The Applicants respectfully submit that Toyama makes no mention of an active selection technique. Specifically, Stubler teaches generating captions or labels for acquired images from preexisting captions or labels associated with stored images. There is no mention in Stubler of an active selection technique.

The Office Action alleges that the field of endeavor is very similar for Stubler and Toyama since Toyama "is directed towards propagating annotations from a known training set to similar images that have do not have any associated annotations." The Applicant respectfully submits that Toyama does not mention or suggest propagating annotations from a known training set to similar images that do not have any associated annotations. The citation offer by the Examiner (col. 1, line 47 to col. 2, line 14 of Toyama) supporting the Office Action's assertion is devoid of teaching relating to annotations.

Furthermore, the Office Action fails to cite any suggestion or motivation in the prior art to modify the Stubler with the teachings of Toyama. Toyama discusses techniques for training a classifier to provide aesthetic scores for input images. Stubler does not demonstrate any appreciation of training techniques such as discussed in Toyama. Thus, the Applicant respectfully submits that no motivation or suggestion exists in the cited art to modify the Stubler with the teachings of Toyama.

For at least the reasons discussed above, the Applicant respectfully asserts that the Office Action has not established a *prima facie* case of obviousness for claim 16. As such, the rejection of claim 16 should be withdrawn. Moreover, the Applicant believes that

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claim 16 is patentable over the cited documents and earnestly requests an indication of allowability for claim 16.

Claims 17-21

Claims 17-21 are dependent on and further limit claim 16. Since claim 16 is believed allowable, claims 17-21 are also believed allowable for at least the same reasons as claim 16.

Claim 25

Claim 25 recites, "The system of claim 16, wherein the at least one criterion includes an ambiguity level of the selected examples." In rejecting claim 25, the Office Action argues that although Stubler does not teach wherein at least one criterion include an ambiguity level of selected examples, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama. The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

The Applicants find only two sentences that deal with selecting examples in the citation provided by the Examiner. The first sentence states, "For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc." The second sentence states, "The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor." Neither sentence mentions or suggests wherein the at least one criterion includes an ambiguity level of the selected examples.

The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein at least one criterion include an ambiguity level of selected examples. OA, pg. 9. The Applicants, however, submit that the above-citation relates to aesthetic categories of images, not ambiguity levels of selected examples.

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The Examiner further urges that Toyama teaches an ambiguity level of the selected examples at column 6, lines 19-31. This citation offered by the Examiner states,

For example, Support Vector Machines build classifiers by identifying a hyperplane that separates a set of positive and negative examples with a maximum margin. In the linear form of SVM that is employed in one embodiment, the margin is defined by the distance of the hyperplane to the nearest positive and negative cases for each class. Maximizing the margin can be expressed as an optimization problem and search and optimization thus lay at the core of different SVM-based training methods. A post-processing procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using ambiguity levels of selected examples.

For at least these reasons, and the reasons given for claim 16, claim 25 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 25.

Claim 26

Claim 26 recites, "The system of claim 16, wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space." In rejecting claim 26, the Office Action argues that although Stubler does not teach wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama. The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

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The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space. OA, pg. 9. The Applicants, however, submit that the above-citation relates to aesthetic categories of images, not a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

The Examiner further urges that Toyama teaches a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space at column 6, lines 19-31. This citation offered by the Examiner states,

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procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

For at least these reasons, and the reasons given for claim 16, claim 26 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 26.

Claim 22

Claim 22 recites, in part, "selecting of examples of multimedia content to be annotated by a user, wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result such that only those examples which are most ambiguous are selected."

In rejecting claim 22, the Office Action argues that although Stubler does not teach actively selecting examples of multimedia content to be annotated by a user, wherein the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, this teaching is found in Toyama. The Office Action cites column 5, lines 15-46 of Toyama in support of its position.

The cited passages of Toyama state,

In this section of the detailed description, a method for training a classifier, according to one embodiment of the invention, is described. Referring to FIG. 2, a flowchart of the method is shown. In 200, a training set of images and corresponding aesthetic scores for the images is input. The images are desirably the same type of images that are to be later judged. For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc. The aesthetic scores for the images are desirably made by graphics professionals. Thus, the web pages are

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desirably scored by professional web page designers, the scanned-in pictures by professional photographers, the created pictures by professional artists, the drawings by professional drawers, etc.

The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor. Likewise, the aesthetic scores for each image desirably includes a number of such scores, by a diverse number of professionals or laypeople, groups of which may be intentionally selected for their common taste (e.g., people who prefer The New York Times to the Wall Street Journal, people who read Wired Magazine, etc.). Each image is desirably scored manually by each professional (or each person surveyed) by whatever criteria the person wishes to use for deeming the aesthetics of the image, or according to some standard specified by the survey. Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as "excellent," "good," "average," "poor," etc. Toyama, col. 5, ln. 15-46.

The Examiner takes the position that Toyama shows that selected examples are annotated by a user and wherein the examples provide for achieving a maximal disambiguation result. OA, pg. 8. The Applicants respectfully disagree with the Examiner.

Claim 22 recites that the examples of multimedia content are selected based on at least one criterion for achieving a maximal disambiguation result, such that only those examples which are most ambiguous are selected. Toyama contains no such teaching. The only selection criterion discussed in Toyama is whether the training set is aesthetically pleasing or aesthetically poor. Thus, the Applicants respectfully submit that Toyama does not provide any instruction for selecting images based on at least one criterion for achieving a maximal disambiguation result, as recited in claim 22 of the present invention.

In rejecting claims under U.S.C. §103, the Examiner bears the initial burden of establishing a *prima facie* case. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ 1443, 1444 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior

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The Office Action also argues, "It would have been obvious and desirable to have used the active selection techniques disclosed by Toyama in col. 5 lines 15-46 to have improved the active selection techniques disclosed by Toyama." The Applicants respectfully submit that Toyama makes no mention of an active selection technique. Specifically, Stubler teaches generating captions or labels for acquired images from preexisting captions or labels associated with stored images. There is no mention in Stubler of an active selection technique.

The Office Action alleges that the field of endeavor is very similar for Stubler and Toyama since Toyama "is directed towards propagating annotations from a known training set to similar images that have do not have any associated annotations." The Applicant respectfully submits that Toyama does not mention or suggest propagating annotations from a known training set to similar images that do not have any associated annotations. The citation offer by the Examiner (col. 1, line 47 to col. 2, line 14 of Toyama) supporting the Office Action's assertion is devoid of teaching relating to annotations.

Furthermore, the Office Action fails to cite any suggestion or motivation in the prior art to modify the Stubler with the teachings of Toyama. Toyama discusses techniques for training a classifier to provide aesthetic scores for input images. Stubler does not demonstrate any appreciation of training techniques such as discussed in Toyama. Thus, the Applicant respectfully submits that no motivation or suggestion exists in the cited art to modify the Stubler with the teachings of Toyama.

For at least the reasons discussed above, the Applicant respectfully asserts that the Office Action has not established a *prima facie* case of obviousness for claim 22. As such, the rejection of claim 22 should be withdrawn. Moreover, the Applicant believes that claim 22 is patentable over the cited documents and earnestly requests an indication of allowability for claim 22.

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Claim 27

Claim 27 recites, "The computer program product of claim 22, wherein the at least one criterion includes an ambiguity level of the selected examples." In rejecting claim 27, the Office Action argues that although Stubler does not teach wherein at least one criterion include an ambiguity level of selected examples, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama. The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

The Applicants find only two sentences that deal with selecting examples in the citation provided by the Examiner. The first sentence states, "For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc." The second sentence states, "The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor." Neither sentence mentions or suggests wherein the at least one criterion includes an ambiguity level of the selected examples.

The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein at least one criterion include an ambiguity level of selected examples. OA, pg. 9. The Applicants, however, submit that the above-citation relates to aesthetic categories of images, not ambiguity levels of selected examples.

The Examiner further urges that Toyama teaches an ambiguity level of the selected examples at column 6, lines 19-31. This citation offered by the Examiner states,

For example, Support Vector Machines build classifiers by identifying a hyperplane that separates a set of positive and negative examples with a maximum margin. In the linear form of SVM that is employed in one embodiment, the margin is defined by the distance of the hyperplane to the nearest positive and negative cases for each class. Maximizing the margin can be express as an

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optimization problem and search and optimization thus lay at the core of different SVM-based training methods. A post-processing procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using ambiguity levels of selected examples.

For at least these reasons, and the reasons given for claim 22, claim 27 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 27.

Claim 28

Claim 28 recites, "The computer program product of claim 22, wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space." In rejecting claim 28, the Office Action argues that although Stubler does not teach wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space, such a teaching is found at column 5, line 15 to column 6, line 50 of Toyama. The Applicant respectfully disagrees with the Examiner's interpretation of Toyama.

The Applicants find only two sentences that deal with selecting examples in the citation provided by the Examiner. The first sentence states, "For example, the images may include a set of web pages, a set of scanned-in pictures, a set of created pictures, a set of drawings, a set of page layouts, etc." The second sentence states, "The set of images in the training set desirably includes a wide variety of images, both those considered aesthetically pleasing, and those considered aesthetically poor." Neither sentence mentions or suggests wherein the

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at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

The Examiner also argues that the statement, "Each image may, for example, be scored on a number basis, such as from zero to one-hundred, or, for example, on a classification basis, where there are a number of categories, such as 'excellent,' 'good,' 'average,' 'poor,' etc." found at column 5, lines 42-46 of Toyama teaches wherein the at least one criterion includes a confidence level of the selected examples, the confidence level being inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space. OA, pg. 9. The Applicants, however, submit that the above-citation relates to aesthetic categories of images, not a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

The Examiner further urges that Toyama teaches a confidence level inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space at column 6, lines 19-31. This citation offered by the Examiner states,

For example, Support Vector Machines build classifiers by identifying a hyperplane that separates a set of positive and negative examples with a maximum margin. In the linear form of SVM that is employed in one embodiment, the margin is defined by the distance of the hyperplane to the nearest positive and negative cases for each class. Maximizing the margin can be express as an optimization problem and search and optimization thus lay at the core of different SVM-based training methods. A post-processing procedure described in the Platt reference is used that employs regularized maximum likelihood fitting to produce estimations of posterior probabilities. The method fits a sigmoid to the score that is output by the SVM classifier. Toyama, col. 6, ln. 19-31.

The Applicants respectfully submit that this passage relates to using Support Vector Machines (see http://en.wikipedia.org/wiki/Support_vector_machines attached herewith) for creating functions from a set of labeled training data. The passage contains no teaching or suggestion of using a confidence level

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inversely proportional to a distance of a new feature of the selected examples from a separating hyperplane in an induced higher dimensional feature space.

For at least these reasons, and the reasons given for claim 22, claim 28 is believed allowable. The Applicant therefore earnestly requests an indication of allowability for claim 28.

CONCLUSION

In view of the forgoing remarks, it is respectfully submitted that this case is now in condition for allowance and such action is respectfully requested. If any points remain at issue that the Examiner feels could best be resolved by a telephone interview, the Examiner is urged to contact the attorney below.

No fee is believed due with this Amendment, however, should a fee be required please charge Deposit Account 50-0510. Should any extensions of time be required, please consider this a petition thereof and charge Deposit Account 50-0510 the required fee.

Please charge Deposit Account 50-0510 the amount of \$120 for a one-month extension for the period for response to the Office Action. No other fee is believed due with this Amendment, however, should a fee be required please charge Deposit Account 50-0510. Should any additional extensions of time be required, please consider this a petition thereof and charge Deposit Account 50-0510 the required fee.

Respectfully submitted,

Dated: June 27, 2006



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